

Serial No.: 09/911,912

Filing Date: July 24, 2001

Attorney Docket No. 10016754-1

Title: METHOD AND APPARATUS FOR REDUCING INACCURACIES WHEN PROCESSING COLOR DATA WITH A TONE MAP

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of claims:

1. (Presently amended) A method of processing color image data, comprising:
 - (a) examining a color component of a pixel in the image;
 - (b) selectively applying a tone map to the color component of the pixel to create an output color component only when the color component is not in a dark area of the image; and
 - (c) selectively blending the transition between pixels in the image.
2. (Original) The method of claim 1, further comprising:
repeating steps (a) and (b) for essentially each pixel in the image.
3. (Original) The method of claim 1, further comprising:
blending the transition between pixels in the image that are in a dark area and pixels in the image that are not in a dark area.
4. (Original) The method of claim 1 where the tone map is using a gamma correction curve.
5. (Presently amended) A method of processing color image data contained in an array of pixels, comprising:
selecting at least one two thresholds;
 - (a) reading a color component of a pixel;
 - (b) transforming the color component of the pixel with a tone map when the color component of the pixel is greater than one of the at least two thresholds, and otherwise preserving the color component when the color component of the pixel is less than another of the at least two thresholds, and otherwise modifying the color component of the pixel to smooth the transition between color components of adjacent pixels.
6. (Original) The method of claim 5, further comprising:

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repeating steps (a) and (b) for essentially each pixel in the array.

7. (Original) The method of claim 6 where steps (a) through (b) are repeated to create a new output color component for each of the color components in the color image.

8. (Original) The method of claim 7 where a different threshold is used to create each output color component in the color image.

9. (Original) The method of claim 7 where there are different tone maps for creating each output color component in the color image.

10. (Original) The method of claim 5 where the threshold is approximately 20 eight bit counts.

11. (Original) The method of claim 5 where the threshold is approximately 10 eight bit counts.

12. (Presently amended) A scanner, comprising:

a photo-sensor array for converting an image into an electrical signal;

an A-to-D converter to convert the electrical signal into raw digital data;

a tone map for transforming the raw digital data into corrected digital data;

the scanner configured to output the raw digital data when the raw digital data is below a first pre-selected threshold, to output the corrected digital data only when the raw digital data is greater than a second pre-selected value, and to output digital data that is interpolated between the raw digital data and the corrected digital data when the raw digital data is between the two thresholds.

13. (Original) A method of processing data contained in an array of pixels, comprising:

defining a threshold;

defining a range around the threshold, the range having a top end and a bottom end;

defining a tone map;

(a) reading a color component of a pixel;

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(b) applying the tone map to the color component when the color component is above the top of the high end;

(c) modifying the color component by interpolation when the color component is below the top end of the high range and above the bottom end of the low range, and; otherwise preserving the color component.

14. (Presently amended) The method of claim 13 ~~12~~ further comprising:

repeating steps (a) through (c) for each pixel in the array.

15. (Original) The method of claim 13 where steps (a) through (c) are repeated to create a new output color component for each of the color components in the color image.

16. (Original) The method of claim 14 where a different threshold is used to create each output color component in the color image.

17. (Presently amended) A camera, comprising:

a photo sensor;

a lens system that forms an image on the photo sensor;

a tone map for mapping image data; and

a processor configured to map image data only when the image data exceeds a predetermined value and configured to blend transitions in the image data.

18. (Presently amended) A camera, comprising:

~~a photo sensor;~~

a lens system that forms an image on ~~the~~ a photo sensor;

a means for mapping the image data; and

a processor configured to map the image data only when the image data exceeds a predetermined value and configured to blend transitions in the image data.

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19. (New) The method of claim 13, wherein modifying the color component by interpolation comprises interpolating between the color component value and a value generated with the tone map.